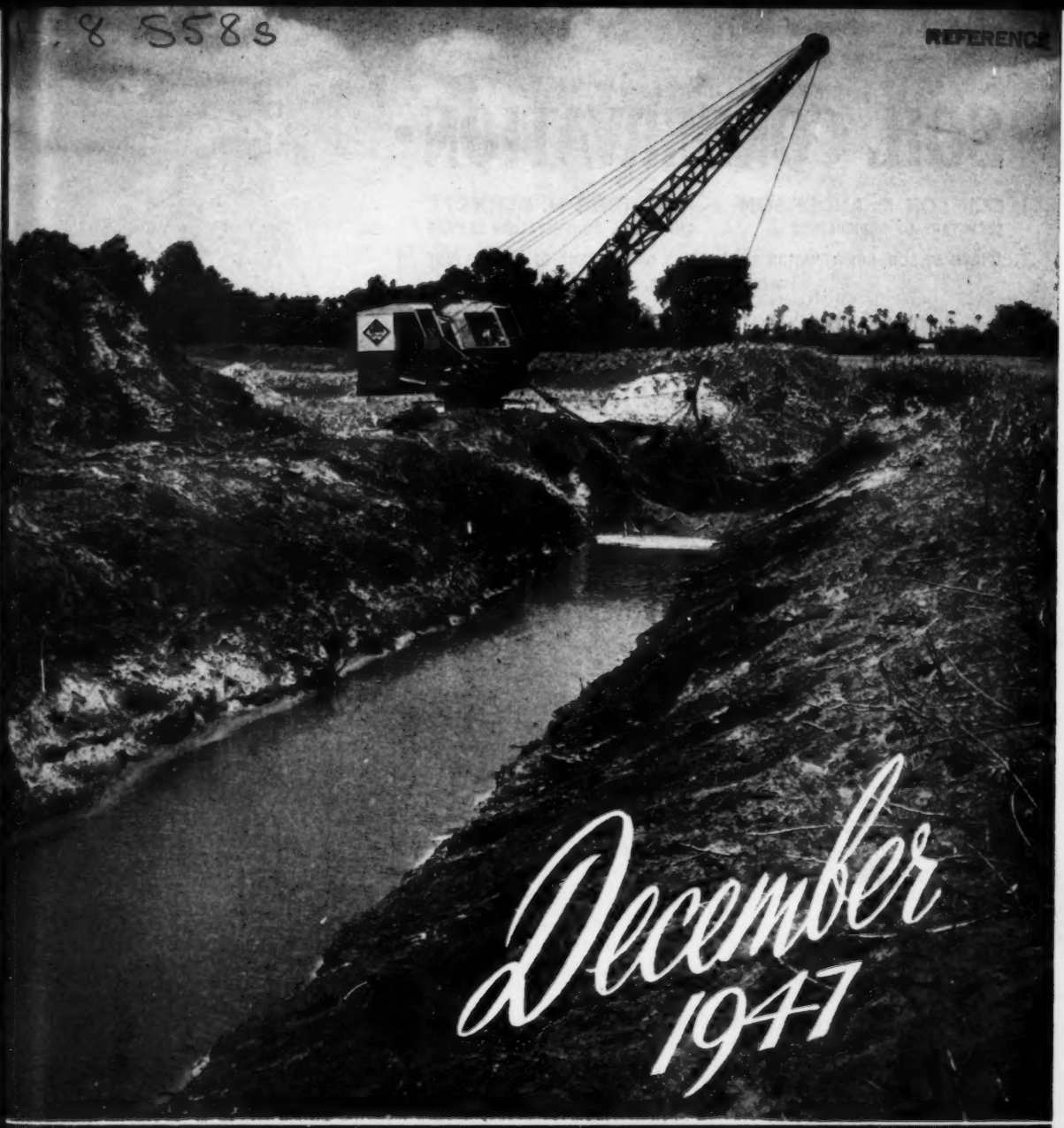

December 1947

SOIL CONSERVATION

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WELLINGTON BRINK
Editor
Art Work by
W. HOWARD MARTIN

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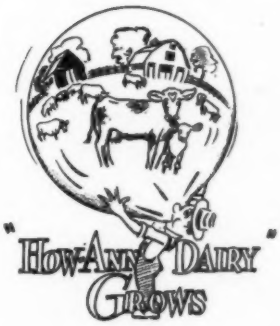

PASTURES PUSH PRODUCTION.—"For many years we have been hearing about pasture improvement," writes Howard R. Kellie, of the How-Ann Dairy, Orlando, Fla. "I don't know why we haven't gone ahead with it. I guess we thought we were too busy. Last spring we decided to do some of it.

"With the advice of Mr. W. B. Hutcheson and Mr. G. F. Keen (Soil Conservation Service technicians) we had 35 acres cleared with a bulldozer. We left a few clumps of trees for shade. We cut it with a heavy disc. We had it cut twice with a light grove disc to level it up. Just before seeding it we put on a ton of lime per acre. We sowed it to Alyce clover and Bahia grass, about 12 pounds per acre. After it came up we put on 800 pounds superphosphate per acre. The clover came up nice and made us a nice pasture.

"When it was up about a foot high we turned the cows in. Our production started to increase and our feed bills go down.

"We are milking 60 cows. Our production went up about 10 gallons a day during the severe hot weather. Our saving on feed was around $150 a week.

"The total cost of the pasture improvement was about $2,000. I know we will save more than that this year. Then we have a nice stand of Bahia."

THE COVER.—The soil conservation districts facilitate big-scale drainage projects. This dragline is busy cleaning out an old main ditch near Grifton, N. C. It runs 5 miles, drains 28,034 acres, serves 13 farm units. The photo is by Hermann Postlethwaite.

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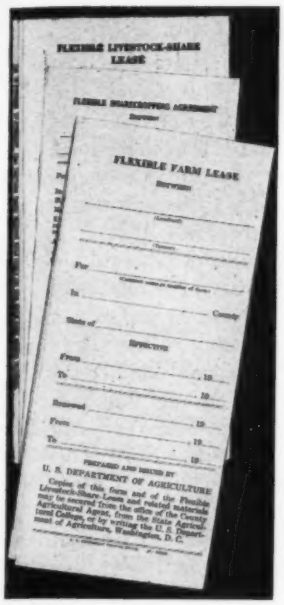


Standard leasing forms of the Department of Agriculture.

LAND TENURE FOR SOIL CONSERVATION

By E. C. WEITZELL and M. M. THARP

LAND TENURE is the right to control and use land. This right may be very limited as in the case of a sharecropper; or it may be more nearly complete and unlimited as provided by a fee simple title under our system of private property. This range of legal rights to the control and use of land involves two major factors which are important aspects of the problem of soil and water conservation. *First*, land owners are free to destroy or conserve their land, as they see fit, except to the extent that they may be compelled to abstain from waste and other damages in the interest of public welfare. *Second*, various tenure conditions and arrangements may give rise to temporary economic advantages that can be realized through exploitative farm practices. These basic characteristics seem to provoke most of the tenure problems of conservation. Short time exploitative interests and careless land management have been permitted under the existing concepts of private property. Uneconomically small units, excessive debt obligations and faulty leasing arrangements permit and often compel farmers to exploit their resources, particularly during periods of economic depression when they must meet heavy fixed costs.

Solutions to the problems of soil conservation associated with land owner operation are not always simple. In the early days of cheap land, exploitation may have appeared to be a plausible alternative for ambitious farmers. Those days are past, but even now, farmers may not feel responsible for the welfare of future generations. Too often, the objective of both land owners and tenants has been to gain a maximum income during each individual year, without giving enough attention to the fact that future incomes will be dependent upon the productive capacity that has been built up and maintained during preceding years. Of course, the lack of general knowledge concerning methods and techniques for achieving soil and water conservation has only recently been supplanted by experimental work, demonstrations, and the teaching of improved land management; so both owners and tenants have been subjected to the damaging effects of erosion and depletion.

It cannot be said validly that any particular form of land tenure has been generally responsible for the existing condition of our land resources. Past forms of tenancy and leasing have not been conducive to conservation but many of the eroded and depleted farms now operated by tenants may have been reduced to this condition under exploitative owner-operation, and erosion damages are not limited to tenant-operated farms today. So it is apparent that more fundamental factors contribute to the problem.

In addition to their possible lack of knowledge, or carelessness, mismanagement or short-term exploitative interests, many owner-operators are faced with some important tenure problems. The most common is the question of farm units of inadequate size and productivity. Many farmers in the eastern part of the United States have access to so little land that they are forced to exploitative practices in order to gain a living. Land that is unsuited to crops is used and subjected to accelerated erosion, be-

NOTE.—The authors are agricultural economists, Bureau of Agricultural Economics, Washington, D. C.

cause they can't get more suitable land. This pressure for subsistence is particularly strong during depressions, when supplemental nonfarm income from other work is not to be had. Of course, if small, low-quality farms are operated by tenants the pressure for current income is intensified by the demands of two interests instead of one; actually total income may represent an inadequate return to the tenants' labor alone.

Excessive debt is another problem that has plagued owner-farmers. During periods of prosperity some farmers are prone to mortgage their holdings to the extent that they have difficulty in meeting their financial obligations when their income drops. They are forced to follow a "take off—put nothing back" production policy in order to retain their homes and the elements of a livelihood. It is to be hoped that this situation, which bankrupted so many farmers during the 1930's, can be avoided in the years to come.

Otherwise the theory that farm owner-operation is conducive to good land husbandry has substantial validity in actual practice. Its validity rests on three precepts: (1) that permanent interest in a particular piece of land is conducive to the maintenance of productivity and conservation; (2) that people instinctively give greater attention and care to property they own; and (3) that the security of ownership assures farmers the right to returns that may come from any improvements they make. Just as these are the good points of owner-operation, so the lack of long-time interests, security, and care has been the major fault of tenancy.

One solution is to assist tenants to become owners, but this procedure has severe limitations. For various reasons it is probable that nearly one-third of our farmers will continue to be tenants. The 1943 Agricultural Census found that 31.7 percent of all farms were operated by tenants (including croppers), and that 37.8 percent of all the farm land was operated by tenants or part-owners under some form of leasing arrangement. Although the percentage of tenancy was shown by the 1945 census to be lower than at any time since 1900, it is probable that a substantial amount of farm land will continue to be operated under various types of leasing arrangements. Thus, to the extent that farm land tenure may influence the realization of soil and water conservation it is important that tenants and landlords, as well as owner-operators, be encouraged to husband the soil in a way that will maintain the basic elements of productivity.

Tenancy is not necessarily an undesirable form of land tenure. In fact, tenancy seems to play an important role in a healthy democratic agricultural economy. There are several reasons why this is true. Some of them follow: (1) Land and agriculture is one of the main fields of investment for both farm and nonfarm capital. Consequently, many investors will continue to require tenants to operate farm business enterprises, just as stockholders require management and labor to operate industrial firms. (2) Tenancy provides the means for young farmers to learn farming and to accumulate capital with which to buy equities in their own land. (3) Agriculture may be the best available employment for many people who lack the training and ability and knowledge to carry the full responsibilities of owner-operation; but who may be able to farm as successful tenants, with their landlords providing financial and general managerial assistance. (4) Some farmers prefer to invest their capital in machinery and livestock rather than land and so be in a position to operate a larger business unit than would otherwise be possible. A substantial amount of the part-owner leasing may be the result of this preference. (5) Tenancy is a method by which the financial risks of farming may be shared between the farm operator and the land owner. To the extent that farm tenancy remains as a segment of the institutional relationships between land and man, it obviously will be desirable to improve this relationship in behalf of conserving irreplaceable soil and water resources.

Improvements in land tenure relationships are paramount, in addition to the continuing need for education and technical assistance with regard to the character and application of conservation. The solution to this problem seems to consist of the following possibilities: (1) prevent and eliminate the more severe economic pressures that cause owners and tenants to exploit land resources and (2) improve the contractual relationships between land owners and tenants so that both parties will be encouraged to bear an equitable share of the costs of conservation and receive a corresponding share of the benefits.

In behalf of eliminating the economic pressures that result in exploitative land use, there are sharp limitations. Except to the extent that certain controls on loan credit can be enforced, each farmer must personally refrain from contracting excessive debt. In appraising the amount of mortgage

debt that can be safely carried, greater attention should be given to long-time or normal earning capacities. Some progress has been made in providing mortgage contracts with variable repayment plans in order to relieve the pressure of financial obligations during periods of low income. Of course, it is possible that the failure to recognize the dangers of inflated mortgage debt may again require debt adjustments and debt moratoria similar to the action taken less than fifteen years ago.

The achievement of farm units of a size that will provide adequate support to both owners and tenants involves even greater obstacles. The basic pattern of land tenure and the associated human relationships to land are difficult to change after they become established. The average size of all farms in the Nation has been increased slightly during the past decade, but the increase came usually through additions to the larger farm units. Little or no progress has been made toward increasing the size of small "problem" farms. The problem of inadequately small farms is so complex that advance toward a satisfactory solution is likely to be slow. The only reasonable procedure seems to be to provide any capable farmers who are trying to farm inadequately small units with the facilities to acquire more land as it becomes available, or to intensify the use of available acreages and thus increase the size of their business.

Possibilities of improving the contractual relationships between tenants and landowners, in favor of provisions for soil and water conservation, are more promising. The usual criticism of tenancy is that short-term leases do not give the tenant enough interest in land resources to encourage investments in conservation. Any farming plan that requires the tenant to invest in soil-conservation practices may necessitate a relatively long lease unless some other contractual method is used that will permit the tenant to realize a full return on his investment. However, there are certain problems connected with long-term leases that make some landowners and tenants unwilling to adopt agreements of long duration. Difficulties and dissatisfactions may arise (1) from provisions for a fixed cash or share rent, (2) from the fact that landlord and tenant may know very little about each other and so not wish to be tied down with agreements of long duration, and (3) from the lack of an agreement to continue the lease for a succeeding term. Of course, special provisions can be included in the lease to overcome these shortcomings, but because only about one in five leases are written, other means for assuring soil and water conservation are needed. This has led to the conclusion that the usual rental agreements, whether written or oral, should be supplemented by a written provision for conservation that would interest both the landowner and his tenant, regardless of the duration of the contract.

A tenant who has no assurance that he can stay on any particular farm for more than a year or two is likely to plan his farming in a way that will bring the largest possible cash return during each immediate crop year. This means a tendency to use exploitative soil management practices. An agreement between landlord and tenant providing *compensation for unexhausted improvements* seems to be the most reasonable solution; along with leasing provisions that define the duties of both owners and tenants with respect to conservation. The freedom of an exploitative economy has ignored the need for provisions of this type but as owners realize what is happening to their resources they begin to seek new leasing provisions that specifically provide for conservation and generally improved cultural practices.

Mutuality is the basic principle underlying the philosophy of compensation for unexhausted improvements. Advantages should accrue to both land owner and tenant, and mutual responsibility is necessary for success. The principal aim of a compensation agreement is to put the tenant farmer in a position as nearly like that of an owner-operator as is reasonably possible with respect to the improvement and conservation of farm lands. If he has assurance that he can get back a fair amount of what he has spent on soil conservation and other improvements, if the lease ends before their productive value is exhausted, a tenant is in a position to do a better job of farming. He can take care of the farm as if it were his own—and perhaps that is the best assurance an owner can have that his farm will be improved and conserved.

Although the *Flexible Farm Lease* developed by the U. S. Department of Agriculture, and many of the leases developed by the State agricultural experiment stations provide that the tenant will be compensated by the owner for soil-conservation improvements made at the tenant's own expense, a

supplemental agreement is usually necessary to cover details. It should be simple, and concise, in enumerating the conservation measures to be applied and the division of expense (including the tenant's labor) to be borne by land owner and tenant. Another important and necessary item is a depreciation schedule for the measures and improvements agreed upon. This schedule should list the value of the tenant's contribution remaining at the end of each year, for a given period. The period of depreciation probably should vary, depending on the "life" of the improvement. Fertility practices might be grouped under a 5-year depreciation schedule but if improvements such as terraces, fencing, and gully control are installed jointly by the tenant and the owner the depreciation period probably should be 10 years or longer.

Agreements providing for joint application of soil conservation practices and measures should include a statement indicating the way the tenant will be paid for the unexhausted improvements when his lease expires. One way is to credit the tenant for the remaining value on any cash rent due the owner when the lease terminates. Another is for the owner to make a cash payment to the tenant for the remaining value of the conservation practice. Both the method of settlement and the exact method for calculating the compensation due should be clearly stated in the agreement.

A usable form (USDA Form Agri–6) for providing compensation for unexhausted improvements was developed by the Department of Agriculture during the war. This form applied only to soil-conservation practices and improvements made by the tenant with labor furnished by him. As conservation practices made entirely by the owner give some benefit to the tenant through increased productivity, they are assumed to be equalized by agreement on rental rates and are not covered in the conservation supplement.

The USDA form was designed for use as a supplement to an existing lease, or it could be used as a memorandum of understanding concerning conservation practices and other items if there were no lease. Section 3 of this form (reproduced below) covering improvements is pertinent to this discussion. This section consists of a simple table for listing soil conservation practices and improvements to be made by the tenant. Space provides for listing the cost or value of materials furnished by the tenant and owner and the value of the tenant's labor used in making the specified

3. The tenant may, with labor furnished by him, place the following improvements on the farm:

Improvements Agreed To Be Made by Tenant	Cost or Value of Materials To Be Furnished by—		Value of Labor To Be Contributed by Tenant	Remaining Value of Tenant's Contribution if Lease Should Be Terminated at End of—				
	Landlord	Tenant		1 year	2 years	3 years	4 years	5 years
	$	$	$	$	$	$	$	$

If the lease should be terminated or expire before the end of 5 years after the making of any such improvements by the tenant, I agree:

(*a*) To compensate him for the remaining value of his contribution as shown in the table above, or

(*b*) To permit him to remove such improvements, or

(*c*) To lease the farm on terms that will require the incoming tenant to pay the present tenant the remaining value of the tenant's contribution.

If the tenant is to be compensated as provided in (*a*) or (*c*) above, compensation will be paid as follows:

---

improvements. A third part of the table provides space for listing the remaining value of the tenant's contribution at the end of 1, 2, 3, 4, and 5 years for which the owner agrees to compensate the tenant when the lease expires, or is terminated.

This form is no longer in use but the section providing for compensation might be the basis of a conservation supplement to the *Flexible Farm Lease* which is currently recommended by the Department of Agriculture; or it might be used as the essential part of a supplemental conservation agreement between a land owner and tenant regardless of the type of lease used. If only an oral agreement is made the proposed supplement could set forth specific conservation practices to be used, along with the allocation of both the estimated costs and the expected benefits, between the owner and the tenant. A positive agreement in this respect is highly desirable, as a tenure policy. Soil conservation on leased farms will be a reality only to the extent that owners and tenants agree to make it so.

Notable progress in the use of supplemental agreements for compensation in Iowa was reported in the February 1947 issue of *Country Gentleman*, under the title of "Conservation by Agreement," and also in SOIL CONSERVATION Magazine in November 1947. These articles report the use of a "conservation rider" as a supplement to existing farm leases that was introduced by Professor I. W. Arthur of Iowa State College. This rider, an extension of the customary cash or share lease, sets forth the contributions that both the landlord and the tenant agree to make to soil conservation practices, and provides for the proportionate sharing of the benefits, according to the contributions made. As a solution to the problem of short-time tenant interests in any particular farm, the tenant is assured of just compensation for all unexhausted conservation improvements he has made, if he does not remain on the farm until their value has been used up.

Establishing the residual value of the several types of improvements at the expiration of each year following application or installation of the improvement is the most important aspect of the "compensation for unexhausted improvements" idea. Residual values after one or more crop seasons, will vary, of course, under different circumstances. The value of lime, terraces, diversion ditches, and numerous other measures and practices that remains after any particular period of use must be determined as a basis for settlements regarding unexhausted improvements. This kind of information is fragmentary at best. As a basis for land tenure agreements relative to the application of soil and water conservation and settlements for unexhausted improvements, there is a general need for the accumulation of all pertinent data that can be found. Residual values of various measures and practices must be developed for the major resource areas. These values must be supported by adequate research and experience so they will be acceptable to all parties concerned.

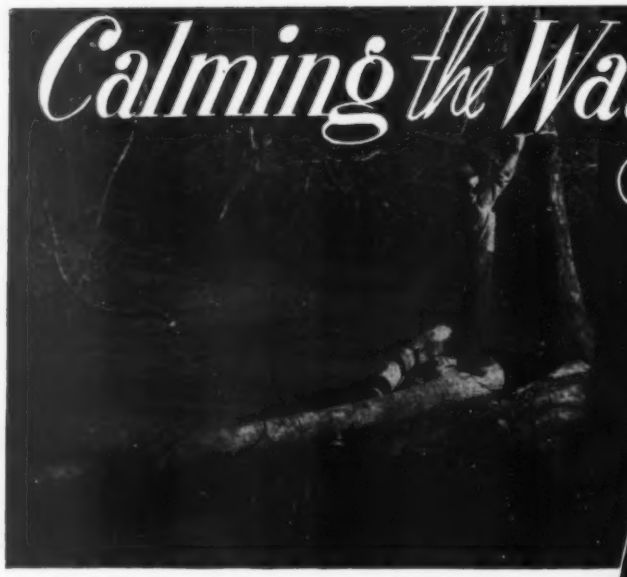
The Illinois and Iowa Agricultural Experiment Stations, for example, have made considerable progress in this direction. As a part of the "conservation rider" to existing farm leases the Iowa Agricultural Experiment Station suggests depreciation schedules for terraces, applications of lime and phosphate, drainage, and other farm improvements. Illinois makes similar recommendations for lime and various types of fertilizers. Other state and federal agencies may have considerable data that could be adapted for this use. And if tenure agreements involving the joint responsibility of owners and tenants for the application and maintenance of conservation practices are to be a reality, generally, it probably will be necessary to establish research projects to obtain the essential information for many areas.

It may be desirable to make provisions for conservation an integral part of the farm lease. Conservation must be a part of the crop and livestock program if it is to be enthusiastically supported by both land owners and tenants. It usually is a basic part of the land-use program, and certainly crop and livestock enterprises should be built around the conservation program. Changes in land use, growing additional forage, growing less row crops and having more pasture, are all possible aspects of soil and water conservation. It is evident that these are essential elements in the entire farm organization and management program. Likewise, they are essential factors in the costs and returns picture, which land owners and tenants should jointly share.

Desirable changes in customary leasing arrangements to accommodate conservation have not had the attention they deserve. This is particularly true in the cash-crop areas where soil and water

(Continued on page 107)

Calming the Waters OF THE Coosa



High-flood stage is indicated on tree by E. R. Daniel, engineer of the Coosa staff.

At right is a reminder of bridges washed out, roadbeds destroyed, in the Noonday Creek watershed.

By JOHN McKINNEY

"I saw chickens riding high on broken houses. Bobbing along on the swirling flood were trees, fence posts, bridge timbers. People were trying to pull drowned automobiles out of water that obscured the streets. I saw farmer's faces as they watched their rich bottomlands go under."

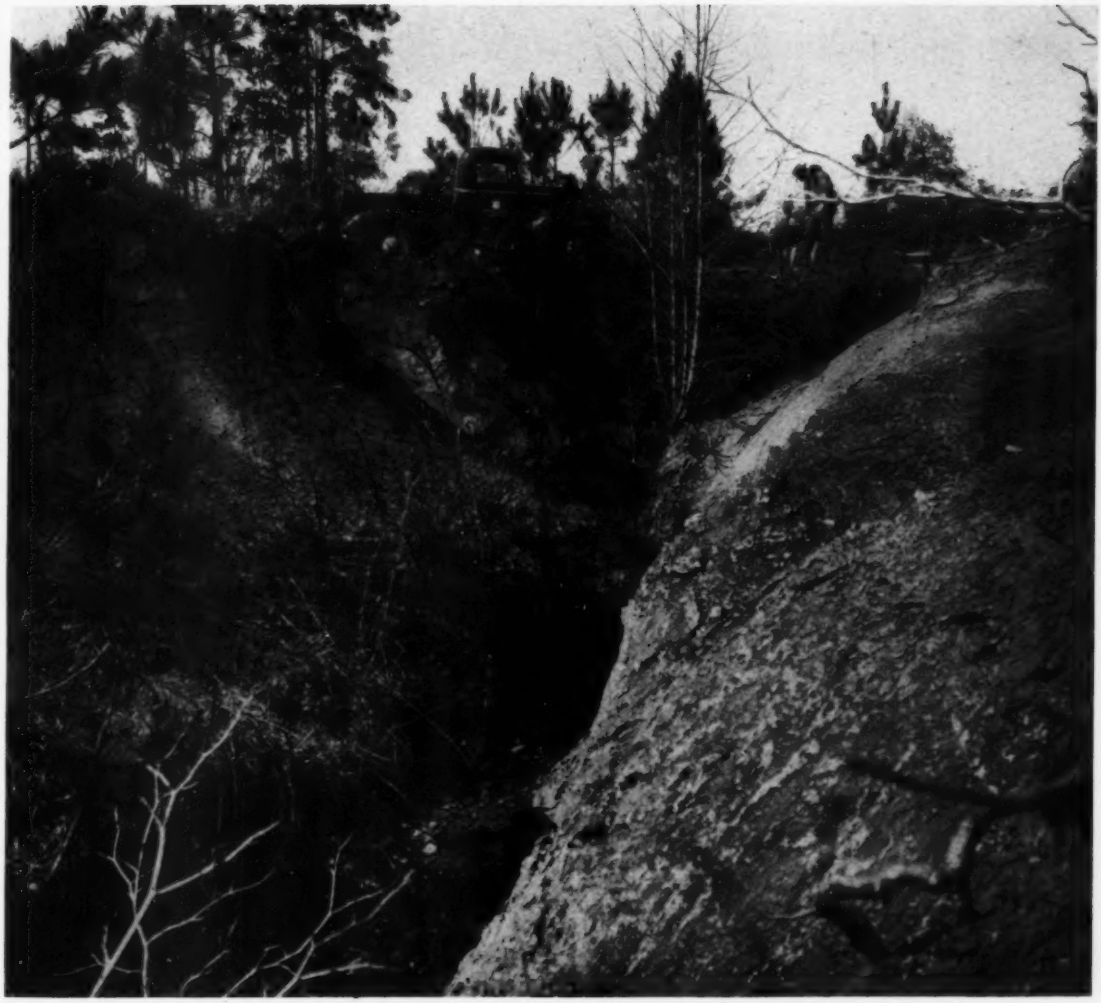
Alton Orr signs the first flood-control plan in the Coosa system.

THUS GOES the eye-witness account of Harry Veatch who for 8 years has seen again and again the disastrous effects of floods in those fertile valleys that nestle between the hills of northwest Georgia.

"If the water goes off by nightfall, she won't sour," one stout-hearted farmer predicted for his milk-stage corn. But sunset came, and murky water continued to rise, quietly souring the corn meant for cornmeal, for hogs, for cash: shoes, groceries, medicine, education; nullifying investments in seed, labor, equipment; destroying some of the best land.

On rich lowlands grass and clovers grew lush, even in hot, dry July and August. Here cows could graze and grow fat. But floods came. Cattle drowned or were stranded. Farmers went in boats to feed them.

"I saw hundreds of tons of soil carried by," Veatch declared. He had worked as district conservationist for the Soil Conservation Service at Rome, Ga., a city set where the Rivers Etowah and Oostanaula form the Coosa, which flows into



Roads contribute to silt and floods in the Noonday Creek watershed. This huge gully leads down from a culvert up there where the car is.

the Alabama, then into the Mobile, and finally into the Gulf.

Last year the Coosa River watershed above Rome was authorized by Congress as 1 of the 11 in the United States for Federal participation by the Department of Agriculture in establishing works of improvement to retard waterflow and prevent erosion in the interest of flood control. Technicians of the U. S. Department of Agriculture started at flood-ravaged Rome and trailed upstream to streamlets and gully heads, through red mud, to tops of bleeding hills where raindrops spattered naked soil on the watershed rim. "Here," they agreed, "is where the problem begins."

The Soil Conservation Service selected Veatch to prepare flood control work plans beginning in the Noonday Creek sub-watershed, a critical contributor to the flood and sediment problem of the Coosa River watershed.

Near the mouth of Noonday Creek lives an old-timer of 80 years. "When I was a boy I had to swing down into Noonday on a grapevine when I went washin', but now, if I were younger, I could jump in without hurtin' myself."

NOTE.—The author is an information specialist, Soil Conservation Service, Spartanburg, S. C.

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Gullies poured silt on roads, added roily waters to unruly Noonday Creek.

On the Noonday Creek watershed lives Mrs. Clara Anneberg, owner-occupant of the pre-Civil War Kirkpatrick Mill site. Mrs. Anneberg told us the mill had ground corn "for over a hundred years." We saw a silted reservoir growing marsh-reeds and alderbushes.

"When I bought in 1941," Mrs. Anneberg related, "on yonder side where you see that grass, there was a great deep hole. I used to catch fish out of it."

Along Noonday Creek we observed once-beautiful farming bottoms abandoned to bushes. Leaving their potentially best lands, the farmers had taken to the red hills where they were trying to eke out an existence on eroded slopes from which top soil had mostly washed downstream.

They pointed out that streams filled with debris made it impossible for channels to carry the run-off from even light downpours. Some channels had filled completely, creating swamps. Soil Conservation Service engineers estimate that Noonday Creek is filling up at a rate of 3 inches a year.

In 1919 farmers in this watershed spent $41,000 to dredge and straighten 10 miles of channel. The cleaned channel has silted back, and then some.

We saw fertile loam sandwiched like cake-filling between original clay and sterile sand or stony wash. Standing on the wash, Farmer Clarence Kurtz observed, "When we moved here 39 years ago we could hardly climb down the creek banks but now the water overflows and gets into the barn."

Too often in Noonday Creek watershed we were ordered to stop by signs lettered: "Road closed—Bridge out."

Silt washed chiefly from raw gullies, roadside ditches, and galled areas. One farmer commented succinctly, "Grader-blades clean out the ditches, then here comes the rain."

Looking downstream, you get a view of Noonday Creek bottomland farming, more and more hazardous as one travels past many hundreds of acres of once-fine lands along the several hundred miles of meandering stream.

All along this route, the stream collects its toll. City people suffer along with farmers.

After essential surveys had been completed on the Noonday Creek watershed, a meeting was called by the Coosa Intra-Basin Committee of District Supervisors, made up of one supervisor from each of the four soil conservation districts involved and a fifth member at large. Attending also, were farmers, technicians of the Soil Conservation Service, county agents, foresters, county road commissioners, state highway representatives, and others.

In the end, a cooperative flood control plan was worked out for the 32,000 acres in the Noonday Creek watershed with the following objectives:

(1) Conversion to forest of 5,960 acres of severely eroded land now in crops, in pasture or idle.

(2) Establishment of pasture or perennials on 5,825 acres of land now in cultivation or idle.

(3) Clearing of 550 forest acres not subject to erosion, for use for clean-tilled crops.

(4) Stabilization of gullies and galled areas on 2,000 acres.

(5) Stabilization of cuts, fills, shoulders, and ditches on 40 miles of roads.

(6) Terracing, establishment of water-disposal systems, and installation of improved rotations on 4,200 acres.

(7) Improvement and maintenance of 1,200 acres of existing pastures.

(8) Snagging, bank clearing and stabilization of 20 miles of stream channel.

(9) Construction of small structures for regulating flood discharge where justified.

"Cultivation has moved back into the hills," says A. S. Booth, an SCS engineer. Several acres now are needed to grow what formerly grew on one acre of rich bottomland. The objective of the watershed improvement work is to reduce the damages from floods so that more use can again be made of the fertile bottomlands.

Agronomist John Brown recommends the use of kudzu with which to stabilize the miles of raw banks and adjoining gullies.

Forester Ellis F. Boyd figures that much of the area set aside for woodland will reseed naturally.

Coosa leaders are urging farmers to cooperate because of the direct benefits resulting to the land. They point to the value of improved bottom lands and the advantages of treating road banks, gullies, galled areas, and stream banks to reduce flood damage in the future.

Alton Orr, a farmer in the Noonday Creek watershed, signed the first Coosa flood control conservation farm plan last February. His 53-acre farm, like most farms in Coosa's 2,572,800-acre watershed is small, but Orr is putting in a complete soil and water conservation program.

LAND TENURE

(Continued from page 103)

conservation may involve the introduction of grass farming and livestock enterprises. Obviously, changes of this nature require new types of leases or decided modifications in the provisions for sharing income and expenses, if tenants are to be interested in conservation. Cotton farmers, for instance, are not going to be interested in grass and livestock farming if their part in the farm returns is limited to the customary share of cotton. The aim should be to make soil conservation profitable to both tenants and land owners. Thus, by assuring tenants that they will receive a fair share of conservation benefits or the equivalent thereof, at least a part of the problem of conservation on tenant-operated farms can be solved.

WORTH UNTOLD SUMS.—"Since the organization of our Soil Conservation District in Green County I have learned more about soil and water conservation than ever before," writes L. W. Shirley, Greensburg, Ky. "The soil test is very helpful. It tells us when and how much to apply in the way of lime and fertilizer. The planning of rotations ahead of time surely is a big help. Contour cultivation is a big help in conserving soil and moisture, thus increasing yields.

"Some of the other things we are thinking about, now that we have a district: the production of fish from fishponds which also catch run-off, the production of timber as a crop, and the rearranging of fields and fences to save soil, time, and labor.

"On account of labor and equipment shortage I have failed to get all the soil conserving practices applied that I would like to have done. Since the war is over I hope to put every soil conservation method on my farm that should be there. From the soil conservation practices I now have I can see that the yields are already doubled.

"I consider that some of the 'musts' of soil conervation are cover crops, green manure crops, good legumes and grasses for pasture and hay. Soil and water conservation are one of the major needs of our county. Farmers are beginning to come to us in the district organization and ask questions about soil and water conservation.

"In 1945 we contoured more acres of row crops and constructed more ponds, diversion ditches, and terraces than ever before.

"I am quite sure that the program of soil conservation will be worth untold sums to Green County. Good soil means more prosperous people, better churches, schools, homes, health. Why not conserve it?"

Conservation Plan

Tile Dra

Modern way to lay tile, to save land from drowning and make it most productive, is to put this trencher to work. It slices out a ditch 19 inches wide and up to 5½-feet deep.

The grade is established in advance by technicians from the Soil Conservation Service. Most of the pictures on these pages were taken on the farm of W. W. Eagles, Macclesfield, N. C.

John Henry Edwards, conservation aide, adjusts sight bar on steel guide stake. The best assurance of efficient drainage is sound and skilled technique.

It's like an assembly line—each crewman at his job—tile distributed up ahead, waiting for trench machine to knife through field. Hermann Postlethwaite took these pictures.

lans May Call for *Drainage*

Drainage, like all farm operations, rests on careful planning. Soil scientist and drainage engineer here study the work to be done on the Berry Brothers' farm at Deep Creek, Va.

The machine is a bear for work. Its use makes it possible to lay from 2,000 to 3,800 feet of tile drainage line per day. Crew consists of operator, helper, and two tile-layers.

Tile is laid by hand, the joints being covered by roofing paper to keep out the soil. The five-inch sections were being laid in the spring of 1947 on the Eagles farm.

After tile is laid and joints covered, they are carefully fixed in place by a few shovelfuls of dirt; the major filling is done, as shown here, by a dozer attachment on a tractor.

HAY YIELD UP 300 PERCENT

By CLARENCE S. JONES

DR. H. H. ZEIGEL of Collbran, Colo., increased his hay yields by more than 300 percent within 4 years. In 1945 he put up 200 tons of good quality alfalfa-clover-grass hay from the same ranch that cut only 65 tons in 1942.

Collbran is a small town in the Plateau Valley about 45 miles east of Grand Junction, elevation 6,100 feet. The Valley derives its name from Plateau Creek, which heads 15 miles southeast of Collbran and empties into the Colorado River 20 miles to the west. It is surrounded by nearby mountain ranges on the north, south, and east.

Dr. Zeigel is director of the Plateau Valley Congregational Hospital at Collbran, and also is known as a mighty good farmer. When he is not busy at the hospital he can usually be found at one of his three ranches. The one he calls his Libby place is a 200-acre irrigated ranch 5 miles southeast of Collbran. It includes 145 acres of hay and small grain land and irrigated pasture. Dr. Zeigel bought this place in the spring of 1942, when about 80 acres of the flat bottom land were spotted with patches of foxtail, with cattails occupying the draws. Serious erosion was evident on the steeper slopes, the ditch system was poorly arranged, fertility was low, the improvements were poor and everything in general was in run-down condition. Only 65 tons of hay were put up this first year from two cuttings.

Dr. Ziegel, being a physician, analyzed the symptoms and prescribed a good heavy dose of soil conservation. But as there was no soil conservation district in Plateau Valley at that time he had to take his prescription to the conservation office in Grand Junction, 45 miles away. A few days later Service technicians and the county extension agent got together with Dr. Ziegel and looked the place over. A few test holes showed that the water table on about 80 acres of the bottom land ranged from 2 to 4 feet from the surface. This was reflected in a poor stand of alfalfa and an abundance of foxtail.

A soil and moisture conservation plan was prepared which outlined the conservation practices that Dr. Ziegel wanted to apply and the amount of technical assistance needed. With this assistance he began to reorganize his irrigation system, putting the ditches on a proper grade, shortening the length of runs and picking up waste water, wherever possible, to be used again. By the installation of a 6-inch wooden stave pipe, 860 feet in length, he was able to pick up excess water on the south side of Grove Creek and syphon it across to the pasture on the north side where it was badly needed. To obtain constant control of the head of water in the ditches and to eliminate lots of shoveling, he installed prefabricated concrete checks or turnouts at ditch intersections.

Stack of "insurance" on Ziegel ranch.

The wet bottom land was planted to a mixture of grasses and clovers best suited to high water-table conditions. A special mixture was used on areas showing signs of excessive alkali. The mixtures included meadow fescue, smooth brome, timothy, red top, reed canary, alsike clover, ladino clover, red clover, and strawberry clover. Proper attention was also given to fertilizing, grazing management, and gully control.

Dr. Zeigel thought the demonstration plan was fine for a starter. But he decided to install some drainage ditches and he needed a dragline to do it. Also, it was inconvenient for him to obtain technical assistance from the Grand Junction office 45 miles away. He was even thinking of jobs that he would like to do on his other ranches. As he was an old-timer he knew that the production of the entire Valley was only half of what it should be. He knew of several other ranches in a condition similar to his own. In talking with several of his friends and neighbors he found a few who were interested in a soil conservation district to include the entire drainage area of the Valley.

NOTE.—The author is work unit conservationist, Soil Conservation Service, Collbran, Colo.

In 1943, therefore, the Plateau Valley Soil Conservation District, including over 396,000 acres, was organized. It was Dr. Zeigel who provided the $18 for necessary legal notices and other expenses incidental to organization.

Soon after a technician was assigned to the district, a district plan was prepared. Under this plan soil scientists made a detailed study of the seepage on the Zeigel ranch to determine the feasibility of drainage. After completion of the drainage investigation, 4,200 linear feet of open drain ditch were cut, some with dragline and some by blasting; more irrigation ditches were built on proper grades, and more concrete checks were installed. The total ran to 2,725 feet of new field ditches and something over 18 concrete checks.

All available barnyard manure, plus 100 pounds of phosphate per acre, are now applied to the cropland each year. On hayland it is spread ahead of a springtooth harrow, but it is drilled in with fertilizer attachment at the time of seeding on grain land. This practice was first started in the fall of 1942.

Dr. Zeigel owned around 25 head of cattle and 300 sheep in 1942. Now he has over 100 head of cattle and 475 head of sheep. He shifts them from one ranch to another as feed and pasture conditions require. However, most of this number are run on public range during the summer.

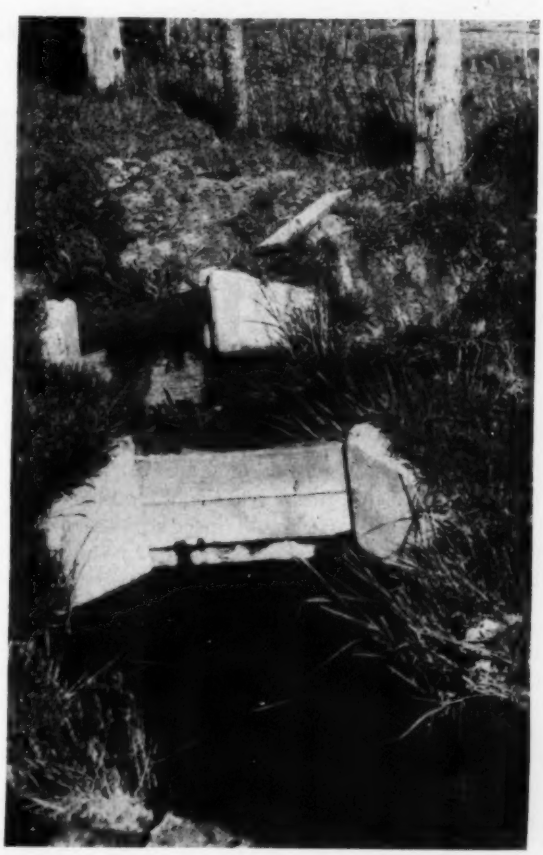
No hay was sold from this ranch in 1942. From the 1945 crop 100 head of Dr. Zeigel's cattle were fed all winter and 100 tons were sold at $20 per ton for feeding.

Many people are afraid to try the conservation way of farming because they cannot afford the extra cost. The Zeigel figures throw some light on this. The wooden syphon cost $430, the drainage ditches $627.78, and the concrete checks $27. Phosphate for 145 acres cost about $435 per year, or $1,305 in 3 years. This makes a total cost of $2,389.78, with the phosphate cost being spread over a period of 3 years. The AAA payments Dr. Zeigel received amounted to about two-thirds the cost of phosphate and about one-third of the other expenditures. This leaves a total net cost to Dr. Zeigel of about $1,158. The yield of hay alone for 1945 was 135 tons more than was produced in 1942. This additional hay was worth $2,500, although only $2,000 worth of it was actually sold. The remainder was put into an additional 75 head of cattle above the number kept in 1942, with one stack being held over for reserve. Dr. Zeigel calls this his insurance. In comparing these figures it should be remembered that the total cost is considered for the 3-year period, while the increased production is figured for the 1 year, 1945. Actually there was an increase in production of grain in 1945 and of both grain and hay in 1943 and 1944.

Other conservation practices projected for this ranch include leveling, completion of the drainage system, weed control, construction of a fishpond, and further improvements of the irrigation system to better utilize the water from the drainage ditches for irrigation. Bromegrass will be planted with new seedings of alfalfa for erosion control and to maintain a high level of organic matter in the soil. Desirable irrigated pastures will be included in the regular rotation system.

A few management factors that Zeigel considers important in increasing production are as fol-

(*Continued on page 113*)



Concrete turn-outs save labor and get better control of water.

Mr. and Mrs. Tolliver check farm records, a pleasant task.

4 Years' TRANSFORMATION

By O. L. PUTMAN

THERE ARE TWO remarkable things about Lewis Tolliver's 40-acre farm southwest of Ratliff City, Okla. First, just 4 years ago it was so badly eroded and run-down that it produced scarcely 5 bushels of corn per acre. Second, in the front yard of the farmstead stands a redbud tree that has white blossoms, a plant rarity.

Thousands flock to the Tolliver farm every year to see the rare white blooms. Many of these sightseers become customers, returning each season to buy fruit, berries, grapes, and garden truck.

"I always wanted to buy a run-down place that I could build up," Tolliver explained. "I couldn't afford it until 4 years ago when I bought this place. It had been cultivated to corn, sorghum,

Tolliver prunes a tree in terraced orchard.

NOTE.—The author is District Conservationist, Soil Conservation Service, Ardmore, Okla.

and peanuts for many years but when I bought it there was hardly any production at all. It had gullies that I couldn't cross with implements. The gullies are now practically gone, production is up and I figure the farm is already worth twice as much as I paid for it."

Shortly after he acquired the place, Tolliver entered into an agreement with the Arbuckle Soil Conservation District to carry out an integrated conservation program. He terraced and contoured the 22 cultivated acres. He alternates two rows of corn with a row of blackeye or stock peas, alternates cotton and peas in the same proportion, and plants hairy vetch for a winter cover crop to enrich the soil and protect it against erosion. He cuts the vetch into the soil in the spring. He uses vetch, also, in his terraced orchard of apples, apricots, peaches and plums. He fertilizes with superphosphate, spreading barnyard manure on the thinner spots.

Tolliver's conservation plan also provides for the improvement of his 18-acre pasture by clearing and regular mowing. With little bluestem as the basic grass, the pasture is grazed only in the winter. The rest of the year Tolliver turns his cattle, 7 cows and their calves and a bull, into a 190-acre pasture which he leases. He has a tidy income from the sale of cream.

Tolliver expects to add pigs to his farm enterprise as soon as his corn production moves into high gear. His formula for making profitable a run-down farm is this: "First you must have a real interest in the land; then you need enough persistence to do the necessary conservation work."

HAY FIELD UP 300 PERCENT

(*Continued from page 111*)

lows: (1) Sufficient labor and machinery to do the various jobs when they should be done, (2) moderate application of irrigation water, (3) prevention of waste-water loss, (4) elimination of injury to hay stands by avoiding close grazing in spring and fall, and (5) keeping good stands of hay at all times through new seedings, or drilling in a few pounds of red clover in old stands, with phosphate in the fertilizer attachment. Zeigel believes that it doesn't cost any more to farm the right way than to farm the wrong way.

Improvements on this ranch have by no means been confined to the land alone. The house was worked over inside and out, and a new granary and toolshed built. A new feedshed, with concrete foundation, was erected. Plenty of headaches were encountered because this last job was done in sub-zero weather, but that was the only time labor was available. The total cost of the structure was $1,600, which Zeigel estimates as probably $400 more than it would have cost to build during favorable weather conditions. However, he figures that the labor saved in feeding, better utilization of hay, and the protection afforded to the livestock will soon off-set this extra cost. It is an automatic affair, or self-feeder, that will accommodate around 200 head of cattle. The feed bin will hold from 100 to 125 tons of chopped hay; the funnel is shaped at the bottom to allow self-feeding into the bunks which extend all the way around three sides. These three sides are protected by sheds, the north side being closed and the others open.

Next to be contemplated was equipment for picking up hay from the windrow, chopping it in the field, and loading into trucks or wagons to be hauled to the shed and elevated into the bin, another prospective big saving in labor.

Another conservation plan was prepared for the Zeigel ranch north of Collbran, last year. With technical assistance provided through the local soil conservation district, Zeigel replaced an old leaky, 7-inch wooden syphon with a new 12-inch transits syphon, 1,016 feet in length. The location of the syphon was changed, and about 500 feet of ditch were eliminated. Zeigel says that being limited to the amount of water that will flow through the syphon is a great advantage, for he doesn't have to worry about his operator washing the place away, or leaching out the minerals by trying to store enough high water in the soil to tide over periods of short water.

Zeigel is now talking about treating fence posts to make them last longer, and local soil conservationists won't be surprised if they hear that he is breeding his cattle by artificial insemination, or using his physician's hypodermic needle to inject hormones into some of his crops.

WHAT HAS IT DONE FOR YOU? Among the most interesting items in recent issues have been the "shorts" telling actual experiences of farmers with soil conservation. Crop yields up? Income increased? Farm permanently safeguarded? We want a lot of these meaty tales from our readers or their friends. We can use 100 to 400 words per item. We can pay only in terms of gratitude, and the knowledge of a good turn done the cause. Address all letters to Wellington Brink, Editor.

LOBLOLLIES *and the* LAND

By JACKSON BENNETT and PETER W. FLETCHER

Ross Cunningham, of Waterloo, S. C., gave Rosemont, his ancestral plantation, a Christmas present in 1930. Almost as soon as he came into possession of the home place, following the death of his father, he began to plan a new cropping system. He planted pines.

In those days, the planting of pine trees was something new in Laurens County. He first talked over his idea with C. B. Cannon, county agent. They decided on loblolly to replace the then low-priced, and consequently unpopular, cotton. That fall, after cotton harvest, planting of year-old loblolly pine seedlings began. Approximately 200 acres were set aside for them. The trees were set out in 8-foot rows, on the contour, and about 6 feet apart in the row. The first field was completed by Christmas.

The field that was planted had many classes of land. In 1947, a little over 16 years later, a series of tree measurements was made on class areas involving four land classes. This article reports what was found.

In the 8 land classes recognized by the Soil Conservation Service, the major factors which distinguish one class from another are kind of soil, steepness of slope, and degree of erosion damage. Further, the kinds of soil are influenced for use by the depth, the texture of surface layer, and the permeability of surface and subsoil layers.

The soil found to have the largest acreage in the plantation was Helena-Vance. Four plot measurements were made on this soil. The other soil found was Cecil, an old Piedmont stand-by. However, the latter had a subsoil somewhat tougher than usual. Two plots were chosen in the Cecil.

Note.—The authors are respectively, soil scientist, Soil Conservation Service, and conservationist, Forest Service.

THE PICTURES

Top, left.—Loblolly pines on Class II land, Rosemont Plantation, Laurens County, S. C. Helena-Vance soil, 3-percent slope, slight erosion.

Top, right.—Here's how they grow on Rosemont's Class III land. Helena-Vance soil, 6-percent slope, moderate erosion.

Lower, left.—Performance on Rosemont's Class IV land. Helena-Vance soil, 12-percent slope, severe erosion.

Lower, right.—Stage reached on Class VII land. Helena-Vance soil, 17-percent slope, very severe erosion.

For the reader unfamiliar with Piedmont soils, the following description of Helena-Vance soil unit is taken from the land capability table for the Laurens County Soil Conservation District: "Moderately deep to deep, moderately light textured, slowly permeable, mottled, semiplastic upland soil."

With the same kind of soil in each of the four Helena-Vance plots, the separation into different land classes naturally was determined by the various slope and erosion conditions. The Class II area was smoothly sloping and only slightly eroded. The Class VII area was steep and very severely eroded, with many deep gullies. The Class III and the Class IV lands were intermediate.

Every tree within each selected tenth-acre plot was tallied as to breast-high, diameter, height, and diameter increment. A summary follows:

	Land Class [1] (Helena-Vance soil)				Land Class [2] (Cecil soil)	
	II	III	IV	VII	II	VII
Survival percent	77	61	67	40	65	34
Present trees per acre	700	550	610	360	590	310
Average diameter, in	5.97	6.62	4.94	4.33	6.54	4.54
Total diameter per acre, in	4,177	3,643	3,012	1,559	3,859	1,408
Basal area per acre, sq. ft	142.4	136.5	90.1	49.9	142.1	42.0
Average height, feet	45	42	34	28	46	25
Volume, cu. ft. per acre	2,143	1,899	1,039	494	2,153	364
Volume, cords per acre	26.8	23.7	13.0	6.2	26.9	4.6
Growth rate, cds./ac./yr	1.7	1.5	0.8	0.4	1.7	0.3
Present value (@ $2.00/cd.)	53.60	47.40	26.00	12.20	53.80	9.20
Date diameter growth slowed	1940	1941	1941	1943	1941	1943

[1] The Class II land had 3% slope and only slight erosion; the Class III, 6% slope and moderate erosion; the Class IV, 12% slope and very severe erosion; and the Class VII, 17% slope and very severe erosion.
[2] The Class II land had a 2% slope and only slight erosion and the Class VII, 12% slope and very severe erosion.

These data indicate that the land-class separation is a valid one for predicting the relative volume growth of planted trees. In each tabulation, whether for survival percent, diameter, height, or volume of wood, it was found that, with only minor exceptions, the tree growth corresponded to the land class. The better the land class, the better the tree growth.

REPORT FROM A BANKER.—"The actual dollar enhancement of many of the farms we have observed is just impossible to estimate," writes Robert W. Crouse, farmer and banker of Dry Run, Pa. "At one time our Committee declined a $3,000 mortgage on one of the farms on which you have done extensive work within the past two years because of the limited potentialities due to serious erosion problems. We feel those practices now being employed have definitely curtailed and improved the situation to such an extent that a $4,000 mortgage would be readily approved."

By O. J. McDougal

DO YOU REALIZE that a farm is a factory? With soil, seed and livestock, it makes meat, grain, and milk—new materials and new wealth created through the efforts of man and machine.

A successful manufacturer must arrange his plant efficiently, must use each part within its rated capacity, and must keep up with repairs. The tractor-maker doesn't use his office building for a foundry, or a foundry for his assembly line.

On his 160-acre farm south of Weeping Water, Nebr., Lloyd Ranney knows all about this. He is applying business principles—and they are paying off. His crop production is up 20 percent, and his beef cattle have increased from 10 to 15 head.

Ranney began his present system of farming 4 years ago, when he started cooperation with the Cass County Soil Conservation District. He now has the conservation plan, which Soil Conservation Service technicians helped him develop, almost fully established on the land.

"My only regret," Ranney says, "is that I didn't start sooner. Soil and moisture losses can't be calculated in dollars and cents, I know, but they were considerable. Biggest damage was the removal of quite a bit of topsoil by sheet erosion, and gullying which was pretty bad in places.

"I am getting more grain from fewer acres. Those 'extra acres' are in bromegrass, sweet clover and alfalfa as part of the crop rotation. The soil is being improved and there is more roughage for cattle."

NOTE.—The author is an extension conservationist, University of Nebraska, Lincoln, Nebr.

Analysis of the farm and a map showing in colors the capabilities of the different parts were made by a Soil Conservation Service soil scientist, who examined the land for soil types, degree of slope and amount of erosion damage.

The map is actually the blueprint of the farm. It became Ranney's guide. He and the Soil Conservation Service technician talked things over. They went over the farm and checked it with the map. Then, together, they worked out the con-

Bromegrass is in irregular-width buffer strips which take up the point rows in Ranney's contoured, terraced fields.

Lloyd Ranney increased his corn yields 15 to 20 bushels per acre by conservation practices. When he completes his terraces and related practices, he will have his soil "fenced in" just the same as his livestock. With him, at the right, is E. T. Stacey, technician of the Soil Conservation Service.

servation plan—the use to be made of the different parts and the treatment each part needed to keep it in repair. The technician also helped apply the plan.

Ranney's farm is an unusually good illustration, because five of the eight capability classes are represented.

Ten and one-half acres are Class II and 62½ acres are Class III. These are the crop department. But they need waterways, contouring, terraces, improved rotations to keep them in repair. How much is needed depends on the kind of land.

Thirty-seven acres are Class IV. This is a "stand-by" part. It is land that can be cropped, but it requires so much intensive conservation treatment to keep it in repair that it is better kept in grass most of the time. But it is therefor emergency cropping.

Fourteen acres are Class V, and 16 acres Class VI, which is land that always should be kept in grass or trees. They are the grazing and wood products departments. Each is rated as to capacity for use. Classes VII and VIII, not found in Ranney's farm, have the lowest use capacity. In fact, Class VIII has no agricultural use, but is good for wildlife.

Now let's see how Ranney uses his land. Cropland totals 93 acres—his Class II and III land.

Pasture amounts to 46 acres, meadow is 8 acres, and 5 acres are in woodland. Farm buildings, lots and roads take up 8 acres.

"It has taken some rearrangement of fields and quite a lot of work to get the farm lined up this way," Ranney commented. "I still have some terraces to build. But when I get them built, I'll have the soil fenced in just like I fence my livestock."

"Does it pay?" he continued. "Well, let's look at my corn yields. Last year I got 70 bushels per acre, contrasted to 50 bushels which neighboring farmers got farming up and downhill. And in 1945, my yield was 55 bushels, compared with 40 bushels in the neighborhood's up-and-down fields."

He went on to explain that he harvested 1,200 pounds of bromegrass seed from 4 acres in waterways, buffer strips and point rows. He sold it uncleaned for 15 cents a pound.

"In addition," Ranney said, "the larger amount of roughage has upped my livestock production. I now have 15 head of purebred Herefords, instead of 10 grade animals. That's a 50 percent gain in number.

"The cattle use the bromegrass in the waterways and buffer strips for winter pasture, and need little grain. Yet, they stay in good condition. In spring, winter, and fall, they use bromegrass and alfalfa along with other pasture. As a result, I have less protein feed to buy."

Altogether, Ranney estimates his over-all production is up more than 25 percent. In production, that's like adding 40 acres to the farm. In practice, it's cheaper, because he didn't have to invest in more land or go to the expense of farming more acres.

It is the result, Raney explains, of doing what any factory operator would be expected to do—getting a blueprint of the plant and following it. His crop department is where it should be. So is his grazing land. And he knows what to do to keep the plant in repair.

Father-Son Team Remakes Farm

By Ralph D. Branan

George D. Gober bought his 75-acre farm in Madison County, Ga., sight unseen. At least he hadn't seen it since he was a boy.

"It was a jim dandy place when I was a kid," he recalled.

But the morning he went to the farm after buying it, "I had a hundred and one notions of not moving on it." The farm he remembered as a "jim dandy" was eroded and run-down. "Little old corn in August," Gober said, measuring with his hand just above his knee," amounted to practically nothing."

That was the kind of farm he bought in 1943, but it isn't the kind of farm he has now. Today the place is more as it was when he was a youngster.

So well has Gober healed and improved his land that he was one of 20 Madison County farmers who received soil conservation certificates of merit

Note.—The author is acting work unit conservationist, Soil Conservation Service, Danielsville, Ga.

Strip cropping helped to snap up production on a once-run-down farm.

from the Georgia Bankers Association recently. He started his complete soil conservation program soon after he bought the farm, with help from Soil Conservation Service technicians in the Broad River Soil Conservation District.

Your first glimpse of the Gober farm from the main road shows you a field systematically strip cropped, and with the terraces well-maintained.

Then you round a curve to see the Gober home.

Shrubbery is around the bungalow, and oak trees at the side. Grass and lespedeza, neatly trimmed, are in the yard. At the right is a modern chicken building. From the hillside comes the sound of hoes, hoeing cotton freshly plowed and unusually good. To the left of the house are two permanent sericea strips and a meadow strip of kudzu.

Mrs. Gober was working with milk and butter, listening to the radio. Her husband, she said, was plowing the new cane patch.

"Syrup was two and a half a gallon last year, and I've got my own cane patch this year," Gober said.

Then we asked about the work for which he received a certificate of merit.

Gober stepped back in the shade of a persimmon tree, and we followed, thinking that here would be a swell place to tree a possum this fall.

"My yields have gone up a lot since I moved here in 1943", Gober said.

"The first year I had 16 or 17 acres in cotton and made 9 bales; last year, 13 acres in cotton and 10 bales. The first year I made hardly any oats at all; around 20 bushels per acre. This year, and it was my first year without nitrate of soda, I made 70 bushels. It was the same land that was in oats in 1943."

Although the corn yields have been doubled, Gober has just about quit growing corn. He has only 3 acres in corn now, depends on small grain for feed.

And soil conservation farming has paid. In 1943 the gross income from this 75-acre farm was less than $500; in 1946 it was $3,195 "and not all the increase was from better prices; most of it was from soil conservation."

Even the garden is on contour.

Good rotations of oats followed by annual lespedeza, cotton, oats, and volunteer lespedeza have largely been responsible for the increased yields, the young farmer said. But the rotations have been supported by a water disposal system that includes broad-based channel-type terraces and meadow strips, contour cultivation, and fertilization. On most cropland, the rotations are in contour strips, with banks of oats and lespedeza alternating with strips of cotton or corn.

"If the terraces are far enough apart, I'm a fool about strip cropping," Gober admitted. "If the terraces are close together or if the land is pretty steep I'd rather plant solid to grain and lespedeza."

The land is prepared, planted, and cultivated with tractor-drawn equipment. There's not a mule on the place. Gober said he'd like to have a combine to harvest the oats, but that on a small farm he believed it was cheaper to pay a neighbor to combine the small grain.

When we asked him what he thought about cotton, he came back with: "I like cotton to an extent, but I like to mix it."

And "mix it" he does, with pastures, meadows, dairy cows, poultry, and small grain.

"I didn't have much of a pasture to begin with," Mr. Gober said. "But it's pretty good now; fertilized it twice with 18 percent phosphate; and put out 10 tons of lime. I'm going to sow some sericea lespedeza in my permanent pasture."

Kudzu, which was disked thoroughly this spring, has covered the plow marks and will be ready for grazing soon.

"I have three milk cows, one a purebred Jersey," Gober said. "We sell buttermilk and butter in

Commerce. I want to get enough cows so that the milk route will switch by my place. I have some more acres that I aim to put in something else, and I can certainly use it for pasture. If a piece of land is too steep for a tractor it must be in something else."

Then Gober started talking about their 16-year-old son Roger.

"He just messes around and clears more money than I do in 12 months," the proud father exclaimed. "Last year I gave him a 3-acre cotton patch. He side-dressed his cotton a little before I did and made 5 bales.

In their home the Gobers have an electric churn, a refrigerator, radio, electric lights, and an electric iron. And 400 or 500 quarts of home-canned food every fall. In the freezer locker at Commerce the Gobers have a whole hog, beef, peaches, and strawberries.

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72 LUSTY ACRES.—Five years ago I moved to a very steep farm consisting of 240 acres, of which 83 acres are tillable," says Glenn Schaltz, Huston, Minn., farmer.

"This farm was contour stripped a few years before I came, but it had been badly eroded before that, and there were still some bad ditches that were nearly impossible to cross with machinery. Now after the last 5 years of contour farming no sign of any ditches remain, and by the use of clover, lime and alfalfa rotation, our side hill strips have improved to the extent that the last two years it has been nearly impossible not to raise oats, as last year even Vicland oats lodged on some of the strips. This was land that 10 years ago would not even raise oats.

"From the 72 acres that are cropped each year we now keep a milking herd of 20 Swiss cows, and about 10 heifers, have 350 laying hens, and raise about 50 or 60 hogs per year. This amount of stock is probably double the amount that was kept before starting soil conservation."

THREE YEARS' PROGRESS.—"On my farm," writes C. L. Satterwhite, of the Grant County Soil Conservation District, Jonesville, Ky., "by putting into use the practices recommended to me by our farm planner, which includes proper selection of cropland, constructing diversion ditches and terraces, contour planting, pasture management, and proper use of phosphate, lime, complete fertilizer and manure, I was able to increase production of tobacco from 1,124 pounds per acre in 1942 to 1,830 pounds per acre in 1945, the production of hay from 1 ton per acre in 1942 to 2 tons of hay per acre in 1945. The carrying capacity of my pastures in 1942 was 5 cows, 2 horses and 50 ewes; in 1945 they produced pasture for 5 cows, 2 horses and 94 ewes, with grazing nowhere near as close as before.

"The crying need is for this work to be done with much greater speed than has ever been accomplished if we expect to increase our standard of living, maintain our farms and keep this Nation secure."

UPSURGE OF COMMUNITY.—"I would like to tell you some of the things the South Logan County Soil Conservation District has done in my community," writes E. C. Price, of Russellville, Ky.

"I have a neighbor who paid $1,500 in 1936 for a 300-acre farm which had 50 acres in cropland, and the rest in bushes and woods. By 1942 this man had terraced, limed and phosphated to the point where he had 150 acres of crop land, and every acre a producer. But when he started he had fields which had been worthless and abandoned so long that the bushes had grown 20 feet tall, and he had one field with gullies so deep that you couldn't drive a corn planter over them. This deep-gullied field was terraced, limed, and phosphated in 1942 and sowed to a mixture of red clover and orchard grass. In 1943 he harvested 2½ tons of red clover and orchard grass hay per acre, plus 2½ bushels of red clover seed to the acre. In 1944 this field was pastured. In 1945 it made more than 48 bushels of corn per acre.

"In 1942 a certain untreated field of mine produced 6 barrels of corn per acre. (A barrel is equal to four bushels of corn untreated, or six de-germed bushels.) Then I terraced this field and sowed it to a mixture of grass and Korean lespedeza. In 1945 I planted it to corn and made 10 barrels to the acre. Before I terraced this field had a steep gully. Now it has almost disappeared.

"I am glad I live in a community where there is a soil conservation district because I know it is making a better place for us to live and also a better place for the next generation."
